



APPLICATION MANUAL

Glueing

PRECIOSA



Application of Preciosa Products by Glueing

Preciosa products can be glued on a wide range of materials. The highest quality of glueing is ensured by a careful observance of the following procedures.

OVERVIEW OF PRECIOSA PRODUCTS SUITABLE FOR GLUEING

COMPONENT		GLUEING
Fashion Jewellery Stones	Round Stones	✓
	Fancy Stones	✓
Flat Back Stones	No Hotfix Stones	✓
Nacre Pearls	Nacre Pearls, Nacre Cabochons	✓
Cabochons	Cabochons, Special Stones	✓
Stones in Settings	Round Stones, Fancy Stones, Cabochons, Special Stones	✓
Crystal Sheet		✓

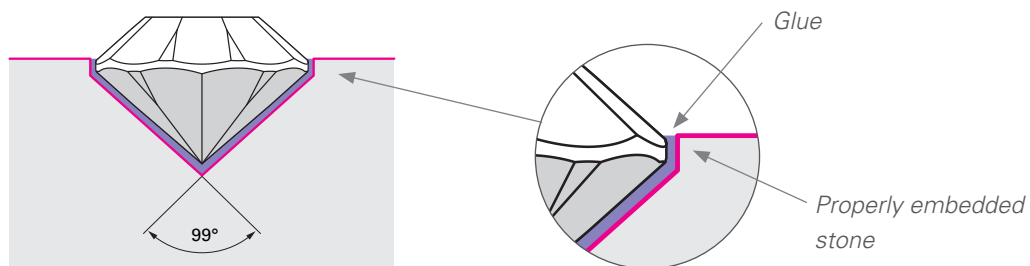
MACHINES FOR CAVITY PRODUCTION AND CAVITY SHAPE

Application of Preciosa stones by glueing requires cavities which can be produced by:

- CNC milling machine
- Column drill
- Hand drill



A correct shape of the cavity (the vertex angle for MC Chaton MAXIMA is 99°) is extremely important for proper mechanical qualities of the glued joint.



TOOLS AND AIDS



Always use protective aids.



Protective gloves



Goggles



Tools for producing glued joints:



Dosing device



Precision balance



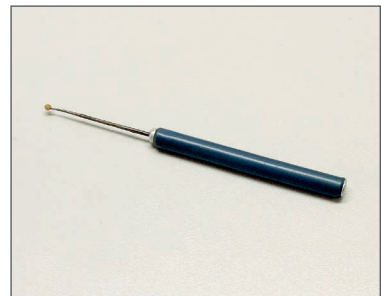
*Dispensing syringe with
dispensing tips*



Glue



Tweezers



Wax stick

Glueing procedure

When glueing Preciosa products, optimal results can be obtained only by coordinating the entire glueing procedure. It is very important to follow particular glueing steps in the right order. Experience has shown that the most common reasons for detached stones are inappropriate application areas, poorly produced cavities, unsuitable glueing system and insufficient quantity of the glue. Specific instructions for glueing particular products are given further in this section.

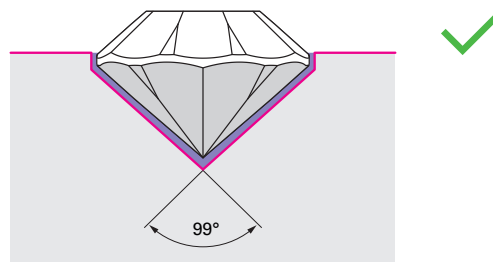
CAVITY PRODUCTION

Many Preciosa products, especially stones, require cavities for their application on some materials. A properly produced cavity and a suitable glueing system ensure a stylish and long-lasting application. The cavity makes it easy to glue the component properly and ensures a higher protection of stones against mechanical and chemical stress.

The optimal cavity for the MC Chaton MAXIMA should have an angle of 99° . The maximal diameter and size of the cavity should be the same as of the stone plus at least 0,1 mm.

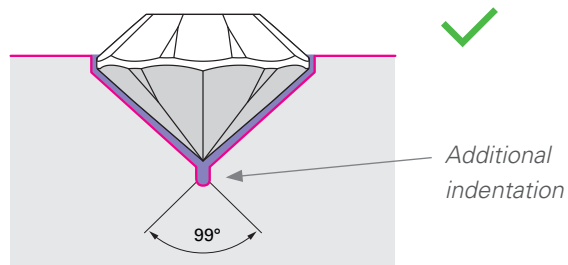
Production methods

- **Drilling** – hard materials
- **Milling** – hard materials
- **Water jet cutting** – shapes integrated into flat materials



Please note that only end-to-end cavities can be created in this way. In addition, materials that soak water and swell cannot be processed. Absorbent materials must be fully dried before glueing the stones.

• Casting

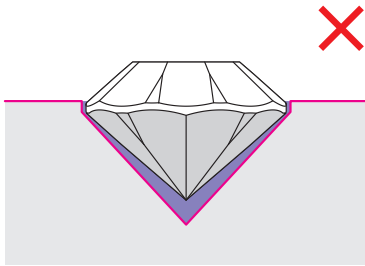


It is recommended to make an additional indentation that will prevent the stone to be lifted.

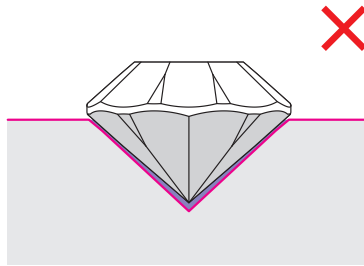


When producing cavities, the dimensions should be based on the main dimensions including the maximal tolerance for the defined product. These dimensions can be acquired from the Preciosa sales representative.

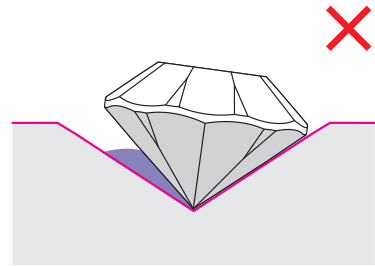
Incorrect cavities



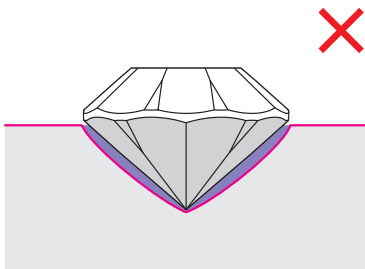
Angle too small



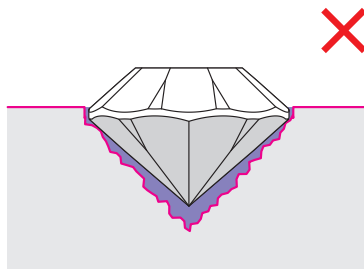
Stone too large / cavity too small



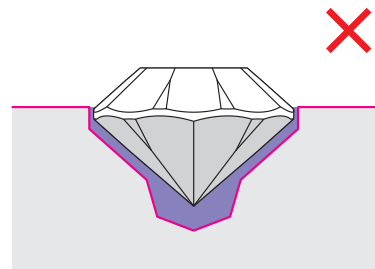
Angle too large



Rounded cavity



Cavity with an uneven surface



Gap too large

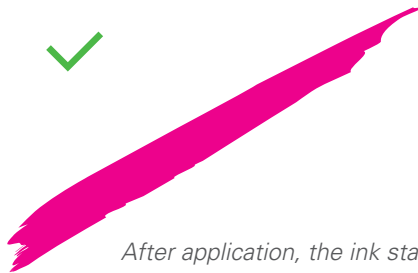
CHECKING THE SURFACE TENSION AND SURFACE PRE-TREATMENT



Test the correct wetting properties of the surface for crystal application with a test ink ARCOTEST. The material is suitable for stone applications if the ink does not disappear in few seconds.



Test of the surface tension



After application, the ink stays in a compact, uninterrupted and unchanged condition on the surface or it spreads and increases the wetted area without changing its consistency – the material is suitable for glueing



The wetted area becomes smaller and starts to break into spots and individual droplets – the material is not suitable for glueing

Surface pre-treatment

In case the surface tension is below 38 mN/m, the following surface pre-treatments can help. The cleaning procedures should be carried out in the right order.

TYPES OF CLEANING	PRE-TREATMENT CLEANING METHODS
<p>1 Mechanical cleaning Sanding, blasting, brushing; for costume jewellery usually not needed.</p>	<ul style="list-style-type: none"> • Removal of dirt, varnish residues, rust, scale. • Roughening the surface.
<p>2 Washing and degreasing It is important to make sure that the tensides do not contain any silicone as this would negatively affect the adhesion. When using solvents, it is recommended to test the durability of the cleaned surface in advance to avoid any damage. Do not use solvents containing substances with a high boiling point due to a high risk of residues. When using cleaning agents, wait a few minutes to allow them to evaporate.</p>	<ul style="list-style-type: none"> • Cleaning with tenside solutions, rinsing with de-ionized water. • Cleaning with isopropyl alcohol/ethanol. • Cleaning with acetone (MEK/ethyl acetate) • Cleaning with a cleaning solvent which does not contain substances with a high boiling point (risk of residues).

CHOICE OF THE GLUE

The choice of the best glueing system is the next step that ensures a long-lasting application. When selecting the most suitable glue, the following factors have to be considered:

- The cavity type / gap for glueing
- The stone/application size / glued surface
- The glueing properties and required surface treatment
- The type of the base material

Materials for glueing, types of glue

The following tables provide a list of commonly known and readily available glues that are suitable for different materials. They also serve as a guide to select an optimal glue for the chosen product and base material.

Fashion Jewelry Stones, Flat Back Stones, Nacre Pearls and Cabochons

TYPE OF THE BASE MATERIAL		TYPE OF THE GLUE			
		Two-compo- nent epoxides	Cyanoacrylate	Modified silicone	Dispersive
Hard materials	Glass	✓	✗	✓	✗
	Metal	✓	✗	✓	✗
	Ceramics	✓	✗	✓	✗
	Stone	✓	✗	✓	✗
Polymer materials (glueable)	Plastics: PPMA, PC, PS, ABS, PVC	✗	✓	✗	✗
	Rubber	✗	✓	✗	✗
	TPE (Thermoplastic elastomers)	✗	✓	✗	✗
	Casting resin	✓	✓	✓	✗
Porous materials	Textiles	✗	✗	✓	✓
	PU foams	✗	✗	✓	✓
	Wood	✓	✗	✓	✓
	Paper	✗	✗	✓	✓
	Cork	✗	✗	✓	✓

Stones in Settings

TYPE OF THE BASE MATERIAL	TYPE OF THE GLUE		
	Two-component epoxides		Modified silicone
	UHU	AB	E 6000
Metal	✓	✓	✓
Plastics	✗	✓	✓
Leather	✓	✗	✓

Crystal Sheet

TYPE OF THE BASE MATERIAL		TYPE OF THE GLUE				
		Two-component epoxides		Cyanoacrylate	Modified silicone	Dispersive
		UHU	AB	Super Glue	E 6000	Hercules
Hard materials	Metal	✓	✓	✓	✓	✓
Polymer materials	PVC	✓	✓	✗	✓	✓
Porous materials	Wood	✓	✓	✓	✓	✓



Please note that glueing of Crystal Sheet is similar to the glueing of other Preciosa products.

Examples of glue producers

Two-component epoxides	Cyanoacrylate	Modified silicone	Dispersive
Plus 300 Endfest (UHU GmbH)	Cyberbond Apollo 2999 (Cyberbond)	E 6000 (Eclectic product)	DSI glue * (DSI visions)
Araldite 2011 (Huntsman Corp.)	Pronto CA 50 gel (3M)	Konishi Ultrabond SU (Konishi Co., Ltd.)	Crystal Parade – Embellishing Glue (Crystal Parade)
RBC Adhesive 118 (RBC Ind. Inc.)	Loctite 454 gel (Loctite Corp.)	Cemedine Super XG (Cemedine Co., Ltd.)	
AB - CG 500-35 (A+B)	UHU Sekundenkleber (UHU GmbH)		

* Components glued onto fabric with this adhesive are not suitable for machine-washing.



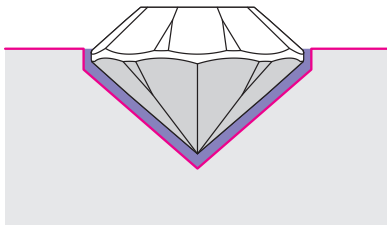
There are many producers of epoxy glues. The crucial quality of the glue is its curing time of ca. 12 hours at 20 °C. The use of epoxy glues „Rapid“ is not recommended. Never use a quick setting glue which could damage the stone foiling! The use of other unmentioned glues has to be consulted with Preciosa sales representative.

Glueing gaps between the base material and the stone

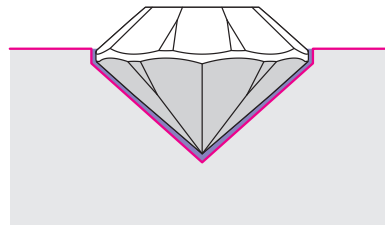


When selecting the glue, it is also important to consider the gap for glueing according to the chosen cavity type. Silicon glues are recommended for cavities with a large gap for glueing as they can fill the gap. The tension in the glued joint is so avoided.

Epoxy-ethane / polyurethane glues offer a higher strength and can be used in cavities with a small gap for glueing.



*Large glueing gap
– use silicon glues*



*Small glueing gap – use epoxy-ethane
/ polyurethane glues*

The size of the stone / glued surface



Please note that glues with a higher shear strength (e.g. two-component epoxy glue Plus 300 Endfest, producer UHU GmbH) should be used for glueing small stones.

GLUEING PROPERTIES AND FINAL PREPARATION OF MATERIALS

Consider also other important glue qualities, as e.g. pot life, viscosity, colour, curing time, ease of dosing and shrinkage when choosing the proper glue. All information can be found in the manufacturer's technical data sheet.

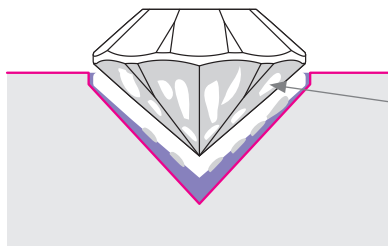
Shrinkage of the glue



Glues tend to shrink during curing and destroy thus the stone foiling (the applied stone can fall out).

Factors which can influence the shrinkage:

- Wrong choice of the glue – glues which shrink considerably during curing and are very hard afterwards are not suitable for glueing Preciosa products.
- Wrong climate conditions during glue hardening and curing.
- Wrong cavity dimensions – too much space around the stone.



Foiling comes off the stone because of an excessive glue shrinkage

Final preparation of base materials

Preparation of the costume jewellery parts:

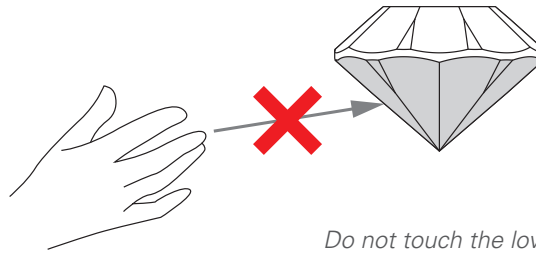
- Remove all undesirable impurities from the surface (dust, corrosion, preserving agents).
- Use organic solvents for cleaning (trichlorethan, acetone, isopropanol).

Preparation of the textile base material:

- Textile materials may have finishes (hydrophobic treatment, fluorine-plastic membrane) that complicate the glueing or make it even impossible.
- These surface treatments have to be removed by chemical cleaning, washing or both. Do not use softeners!

WORKING WITH THE STONES AND DOSING THE GLUE

Preciosa fashion jewellery stones are delivered in an original packing with a trade mark. They can be worked with immediately after unpacking, without any further treatments. When handling the crystals, do not touch the lower part of the stone with a bare hand.

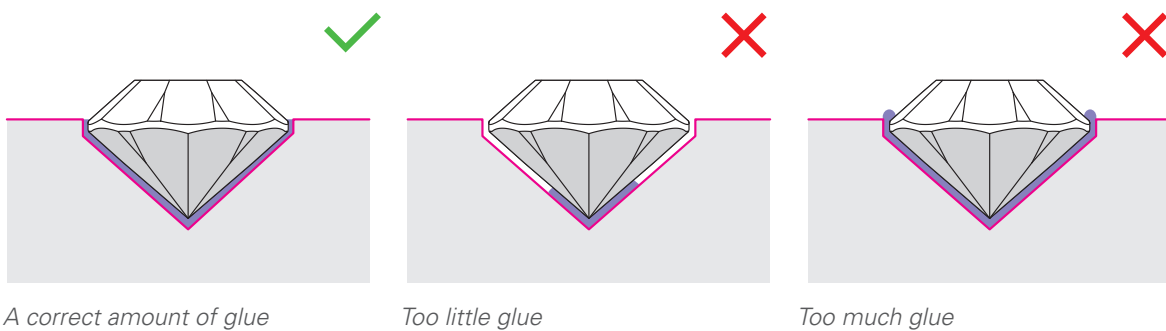


Do not touch the lower part of the stone with a bare hand!



If the lower part of the stone gets dirty (e.g. a finger print) a detergent can be used. The stone should be degreased, dry and without any surface impurities after cleaning.

Used quantity of the glue



A correct amount of glue

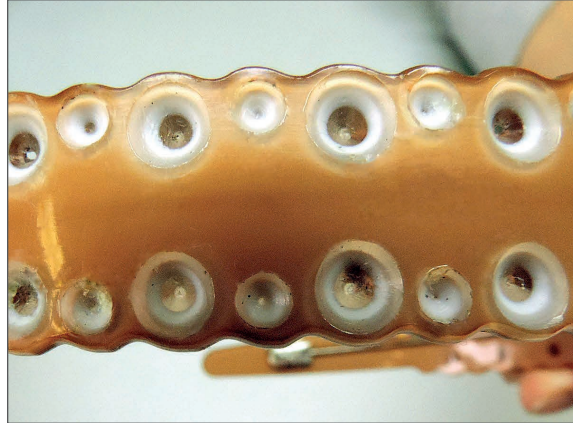
Too little glue

Too much glue

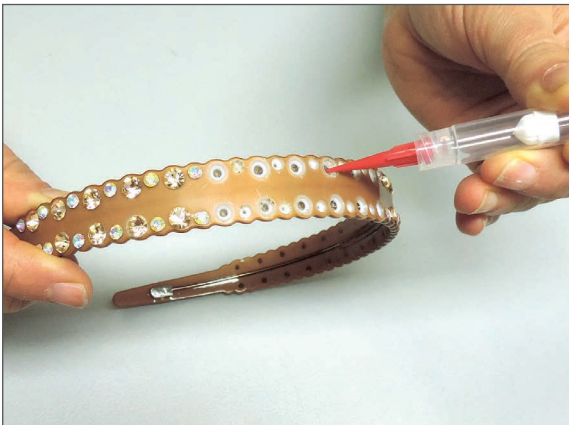
HOW TO GLUE STONES ON A SEMI-PRODUCT



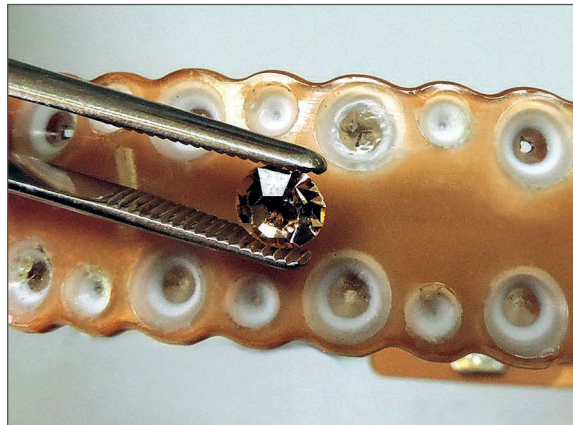
1 Clean the stones carefully before application (a cloth wetted in alcohol can be also used).



2 A semi-product with prepared cavities.



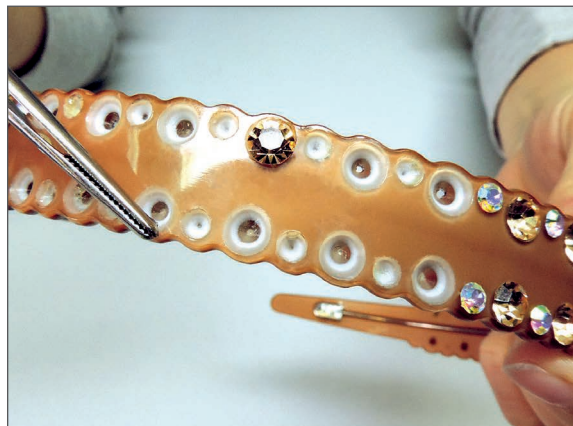
3 A cavity with the glue (applied by hand or with a dispenser).



4 Hold the stone with tweezers.



5 Put the stone into the cavity and press gently.



6 Check the stone setting visually.

Important advice and information

POSSIBLE PROBLEMS, THEIR CAUSES AND RECOMMENDATIONS

PROBLEM		CAUSE
Stones have changed their colour.	The stone is matt and yellow.	1, 2
	The stone seems dark and matt compared with the surrounding stones.	3
	The stone has been plated.	4
The stone fell out of the cavity without foiling.	The stone has changed its colour.	5, 6
	The stone fell out with the mirror coating but without the platinum foiling or the glue.	7, 8, 9
The stone fell out of the cavity with foiling.	Glue is attached to the stone.	10, 11, 12, 13, 14
	No glue is attached to the stone.	12, 15, 16
Excess glue.	Before curing.	2
	After curing.	17

CAUSE	RECOMMENDATION
1 <i>Glue residues were not completely removed and made the stone dirty.</i>	Use a suitable dispenser for applying exactly the right amount of glue. Vacuum dispensers prevent the glue from dropping and reduce the amount of needed cleaning.
2 <i>Too much glue was used.</i>	Use the exact recommended dosage and carefully remove any excess glue using e.g. acetone or isopropyl alcohol.
3 <i>The cavity axis was off-centre in the original model already or the cavity was not drilled straight in the unfinished casting.</i>	Use a special bit when drilling the original model. This offers a more precise control of the direction and depth of the drilling.
4 <i>The jewellery was plated after the stones had been glued.</i>	It is recommended to complete the plating before glueing the stones.
5 <i>A glueing gap that was not completely filled causes corrosion.</i>	Use the exact dosage of the glue.
6 <i>Tensile stress reduces the adhesion of the mirror coating. Oxygen penetrates between the stone and the mirror coating and causes oxidation.</i>	Use a glue that is more elastic and does not shrink so much.
7 <i>A wrong glue was used.</i>	Test other glues.
8 <i>An incorrect proportion of resin and hardener was used.</i>	Follow the manufacturer's instructions for mixing the glue.
9 <i>Cleaning agents affected the glue and/or protective coating.</i>	Use less solvents or a different type of the solvent.

CAUSE	RECOMMENDATION
10 <i>Residues of polishing agent were not completely removed before plating.</i>	Check again the used type of cleaning process.
11 <i>The varnished piece of costume jewellery was not correctly pre-treated before glueing.</i>	Increase the glue adhesion using e.g. a low-pressure plasma process or a flame treatment if necessary.
12 <i>Too little glue was used.</i>	Use the exact amount of glue.
13 <i>The cavity has a wrong shape after plating.</i>	Re-work the original model to make the cavity shape correct.
14 <i>Residues of salts after electroplating were not completely removed.</i>	Check if the cleaning procedure after electroplating of the base material is proper.
15 <i>The given time for glue processing was exceeded and the glue was already stiff during glueing.</i>	Observe the given time.
16 <i>General problem of the glue.</i>	Observe the instructions of the glue producer. Check the store conditions of the glue. Excessive solvent can damage the glue or the protective varnish of the foiling.
17 <i>Products with applied stones were under mechanical stress before the glue cured.</i>	Make sure that the glue has cured before transporting the product.

GENERAL RECOMMENDATIONS

FASHION JEWELRY STONES

FLAT BACK STONES

Stones with coatings
— use only gentle
wash cycle (30 °C).

	Round Stones, Channel	Fancy Stones, Ball	No Hotfix Stones	Hotfix Stones	Sew-on Stones
Turn inside out, choose a gentle wash cycle and use mild laundry detergent. To protect the crystals as much as possible, the use of a soft wash bag is recommended.	●	●	●	●	●
Turn inside out, choose a gentle wash cycle and use mild laundry detergent. To protect the crystals as much as possible, the use of a soft wash bag is recommended.					
Turn inside out and use mild laundry detergent.					
Do not use chlorine bleach!	●	●	●	●	●
Turn inside out and dry at reduced temperature.					
Do not tumble dry!	●	●	●	●	●
Iron inside out using a silk/polyester viscose setting. Ironing the textile inside out and using a pressing cloth is recommended.					
Iron inside out using a wool setting.			●	●	●
Do not iron! Do not iron directly over the crystals.					
The textile can be gently dry-cleaned using perchlorethylene. Turn inside out.	●	●			
The textile can be gently dry-cleaned using hydrocarbon.	●	●	●	●	●
The textile will withstand gentle professional wet cleaning. Turn inside out.	●	●	●	●	●
The textile may not be dry-cleaned.	●	●	●	●	●

To protect the crystals as much
as possible, the use of a soft
wash bag is recommended.

**BEADS AND
PENDANTS**

**NACRE
PEARLS**

**FASHION AND FASHION
JEWELRY COMPONENTS**

Beads

Pendants

Cup Chains

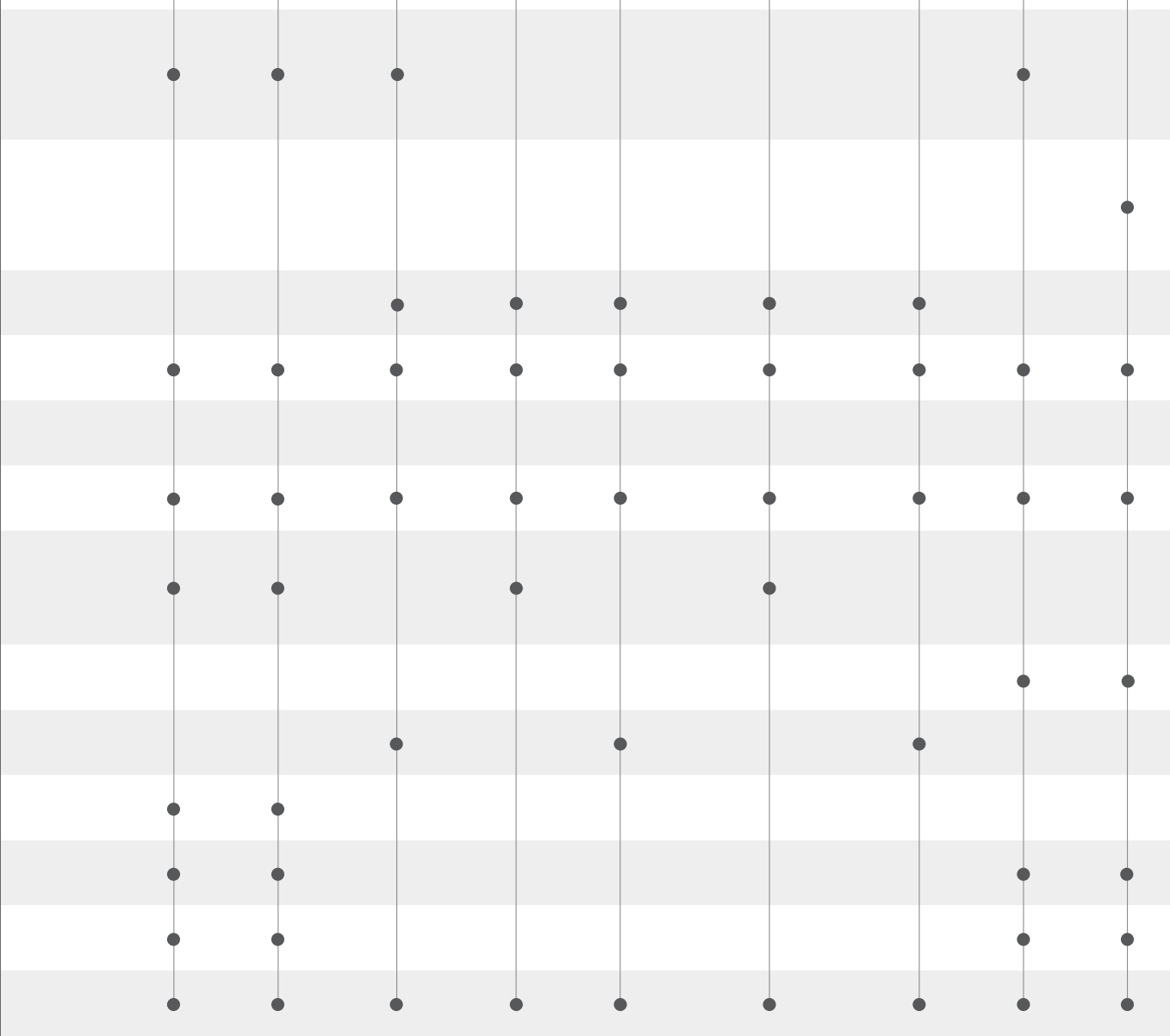
**Plastic
Bandings**

Metal Components
(Metal Bandings, Rondelles, Fancy
Rondelles, Balls, Stones in Setting)

Crystal Net

**Hotfix
Transfers**

**Crystal
Sheet**



Notes

Preciosa Components

A Member of the Preciosa Group

A global leader in luxury goods *manufactured from crystal*, the Preciosa Group is built upon centuries of glassmaking tradition and innovation. From hand-made lamp beads to our cutting-edge, bespoke lighting installations, Preciosa looks to our own unique heritage to draw inspiration for the future of premium, responsibly crafted Bohemian crystal. Together, the Preciosa Group operates a global network of 11 regional offices, completes more than 1,500 flights to customers annually and melts 40 tons of glass every day.

PreciosaComponents.com



APPLICATION MANUAL

Setting, Soldering, Plating

PRECIOSA



Setting, soldering, plating

OVERVIEW OF PRECIOSA PRODUCTS

COMPONENTS		SETTING	SOLDERING	PLATING
Fashion Jewellery Stones	Round Stones	✓		
	Fancy Stones	✓		
Flat Back Stones	No Hotfix	✓		
Fashion and Fashion Jewellery Components	Cup Chains		✓	✓
	Metal Bandings			✓
	Rondelles and Balls			✓
Cabochons	Cabochons	✓		

Setting

MACHINE SETTING IN CUP CHAIN

The most common way of machine setting is setting the stones in a cup chain. An endless chain is produced and then cut into smaller parts according to the costume jewellery design.

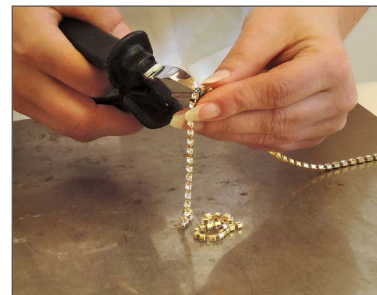
Machine setting is done with a single-purpose machine. The stone is mechanically gathered, placed into the cup and fixed in its position by a pressure head (the cup prongs are closed, i.e. bent and pressed towards the stone). The technical solution can differ in individual stone processing companies.



An endless chain without stones



An endless chain with machine set stones



Cutting of the cup chain

MANUAL SETTING

Setting by hand is used for individual cups or alternative metal parts. The procedure is shown in the following pictures.



Setting the stone into the cup



Manual bending and closing of the prongs with tweezers

Setting tools



Setting and closing tool for individual cups



Tools for closing the cup by hand



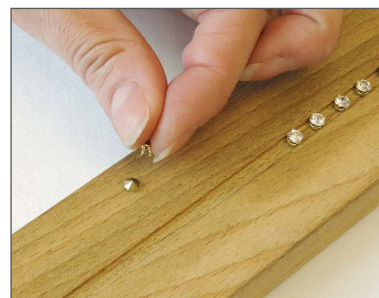
Pressing device



Device for prong closing when setting bigger stones

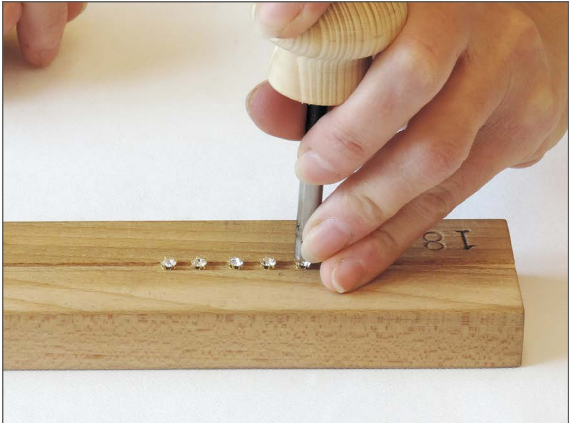


Device for manual setting of rhinestone balls



A simple tool with one groove for manual stone setting

Different ways of fixing the stone in the cup



Fixing the stone in the cup with a tool



Closing the cup by hand



Simple device for setting bigger stones



Fixing the stone in the cup with a pressing device



Note:

Before setting stones, the cup chain should be properly degreased and dried. The stones have to be set with an utmost care and caution as the stone edges must not be damaged.

After setting, the stone should be slightly movable. The cup must be constructed so that the stone can be easily set into it without damaging the foiling or protective varnish. When the cup is too tight or the prongs are bent the foiling or protective varnish can be damaged, possibly resulting in a corrosion (the conductive material of the cup gets into contact with the reflecting layer under the protective varnish). This would negatively influence the optical and aesthetic properties of the stone.

THE MOST COMMON MISTAKES BY STONE SETTING

PROBLEM	RECOMMENDATION
	Check the correct position of the stone in the cup.
1 The stone is set askew.	Check if the right cup size has been used.
	Check the correct choice of the cup chain standard – the cup density on one meter length of the cup chain.
2 The stone is too loose in the cup.	
3 The stone is chipped or otherwise damaged after setting.	Set a correct stroke height of the setting head. The prongs should touch the stone surface just lightly and spring minimally.



Soldering

GENERAL RULES AND RECOMMENDATIONS FOR SOLDERING

Soldering tools



Plate and impression paste



Tweezers



Wire cutters



Solder wire



Smoother



Cup chain



Oxygen/hydrogen soldering kit



Chain spool

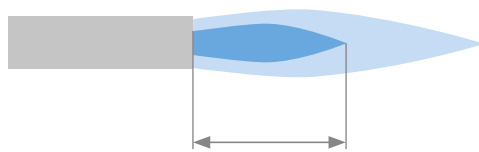
Impression paste

The impression paste should be elastic and should not dry out. It has to effectively remove the heat from the product.

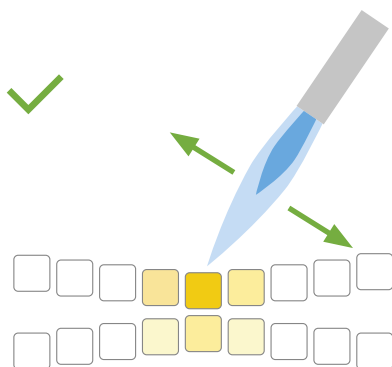
Flame



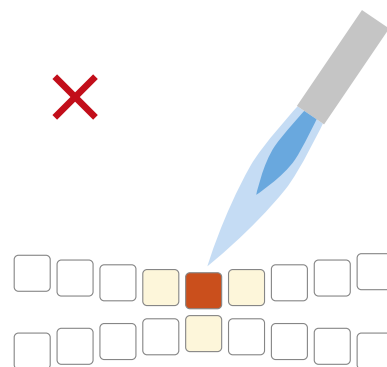
- Change the solder diameter according to the product thickness and dimensions.
- The probability of damaging the stones can be highly reduced by using a burner with a precise flame which can be focused on a minimal area of the soldered joint.
- The flame core should be 5 – 10 mm long; set the oxygen/hydrogen soldering kit accordingly.
- Do not focus the flame on one spot but move it slightly to and fro during soldering.
- Using a proper soldering technique with precise oxygen/hydrogen flame provides the highest labour efficiency.



The optimal length of the flame core is 5 – 10 mm



Moving the flame slightly to and fro during soldering provides an even warming of the joint and does not damage the stones



Focusing the flame on one spot causes stone damage – loss of optical-aesthetic qualities (brilliance, fire)

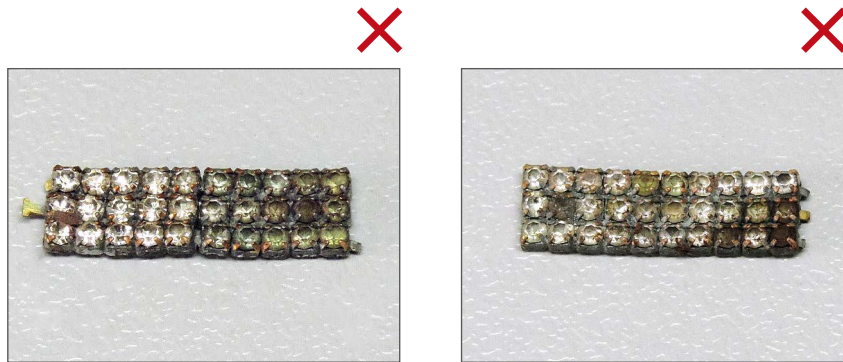
Soldering time and temperature



The right flame size and time of its application are important criteria for a successful cup chain soldering. The size of the flame must comply with the instructions for use. Only that part of the jewellery piece should be heated, where the solder has to flow. If the flame is focused on the jewellery piece too long the stone and the article may become overheated and therefore damaged or destroyed.

A hidden damage becomes usually evident only after further surface treatments, e.g. after degreasing or plating.

A foiling damage by soldering has a negative influence on the results of the subsequent plating process (deterioration of optical-aesthetic qualities).



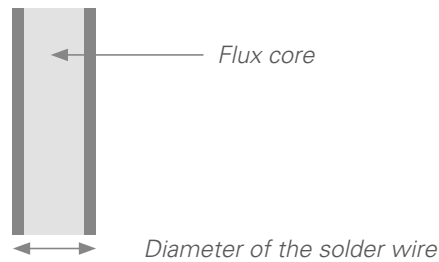
Stones damaged by a long soldering and high temperature

Choosing a proper solder and flux

A solder wire with an integrated flux core is best for soldering cup chains. When using solder pellets or a wire without the flux core, it is necessary to adapt the flux according to the instructions of the solder manufacturer. Corrosive effects on the foiling should be tested in advance.



Solder wire with a flux core



The results should be assessed after the surface treatment as the damage done during the soldering is visible at this point.

Working temperatures and flow characteristics are of particular importance when selecting a solder. Solders are available from various manufacturers in a wire form with or without a flux core, as a paste or in pellets.



When using lead-free solders, an exact temperature control due to higher working temperatures is necessary.

WORKING WITH THE SOLDER

Soldering is a method of producing costume jewellery articles by connecting cup chains with a molten solder. In contrast to brazing, soldering is used for processing semi-products with already set stones. An advantage of this method is its high labour efficiency, its disadvantage (compared to brazing) is a lower joint strength and a greater heat stress of stones during soldering.





The solder amount used for joining the parts should be in accordance with the size of the soldered parts. Too much solder, as well as too little solder, can negatively influence the quality of the product.

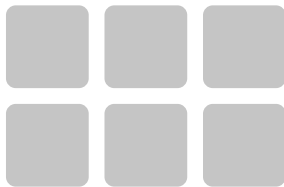


Optimal quantity of the solder



Too much solder (the solder flows over the cups)

Recommended width of the joint



← The joint between the soldered parts should be 0,1 – 0,3 mm

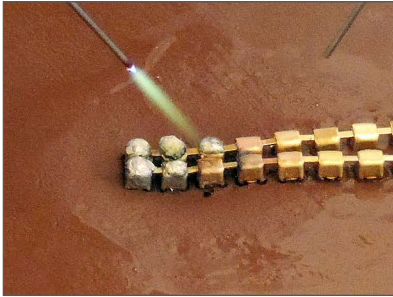
Recommended melting temperature of the solder



← The recommended melting temperature of the solder (S-Sn60Pb40) should be max. 190 °C / 375 °F



When soldering, only those parts of the product should be heated between which the solder has to flow. We do not recommend to apply the solder on the whole product and heat it afterwards.



Only soldered spots should be heated



Solder applied on the whole product and heating of the whole surface



Even though the melting point of the solder is max. 190 °C, the real temperature affecting the stones can be much higher. When using the oxygen/hydrogen flame, the temperature of the flame core can reach even ca. 3000 °C.



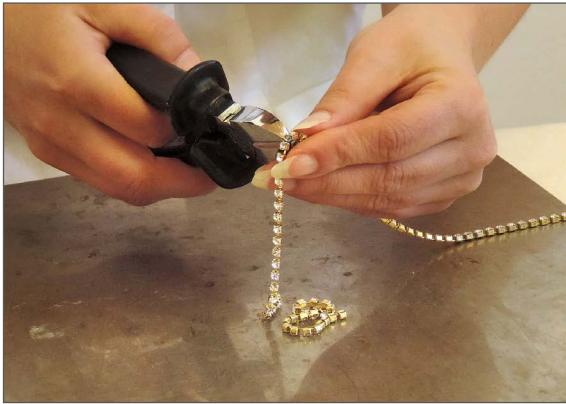
The temperature of the flame core can reach even 3000 °C



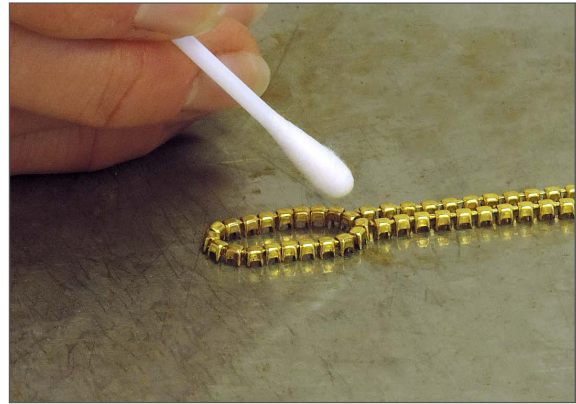
Recommendation:

Using Preciosa stones and components of the top quality together with optimal working conditions (semi-products of the best quality, proper tools, tested procedures) can considerably increase the labour efficiency.

SOLDERING OF SEMIPRODUCTS



1 Cut the cup chain with set stones into pieces of required length according to the costume jewellery design.



2 Degrease and dry the cup chain properly. Use organic solvents or aqueous solutions of suitable detergents. If you want to get a galvanic layer of the highest quality the degreasing procedure can be also done by bright pickling.



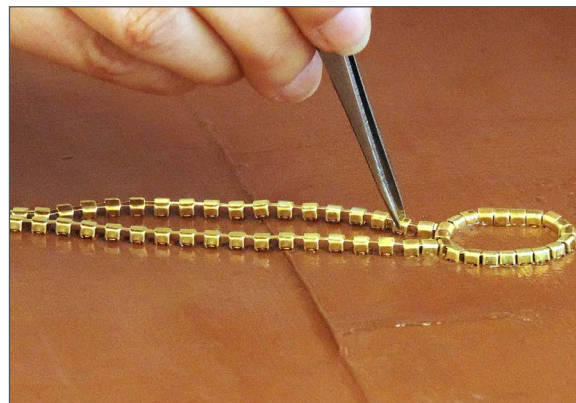
3 Prepare a soldering plate. Spread the impression paste, ram it down and smooth it even in the plate. The impression paste should be elastic and should not dry out.



4 Place the plate on a fireproof underlay. It has to effectively remove the heat from the product.



5 Place the original design – so called “sample” – on the prepared impression paste so that the front side with stones is pressed into the paste. An impression of the sample remains in the paste after the sample is removed.



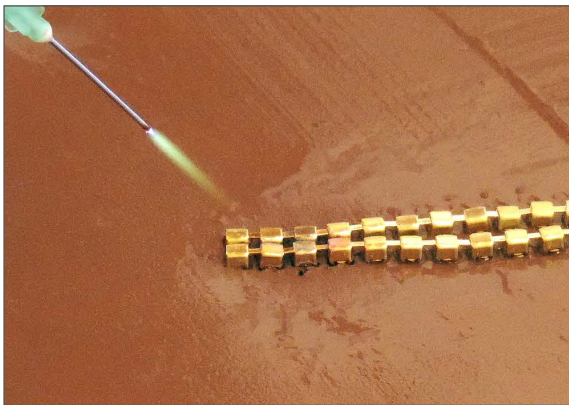
6 Place the cup chain parts into the impression using tweezers. The back side of the components has to be directed upwards, with stone tables facing the paste.



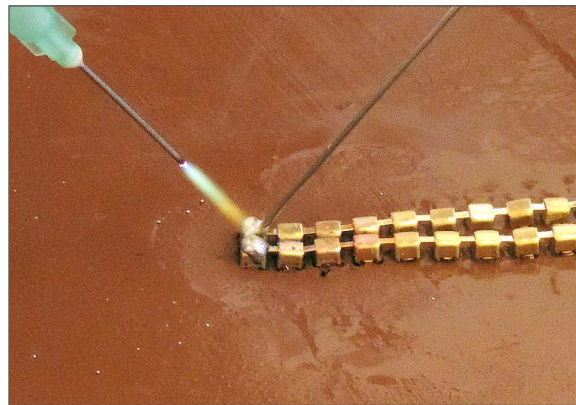
7 Check if the parts in the impression are placed according to the sample.



8 When the layout is definite press on the cup chain evenly using a small plate.



9 Adjust the flame and start to solder. Warm up the part around the soldered joint first so that it can be reliably wetted by the molten solder.



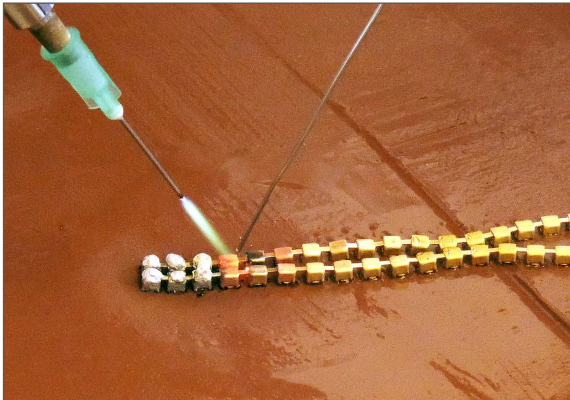
10 Place the solder wire on the hot spot and heat again till the solder melts completely and fills the joint capillary.



11 Repeat the soldering in chosen parts of the jewellery article.



12 After soldering, let the product cool down.



Note:

A strong and reliable joint can only be achieved when parts around the joint are thoroughly warmed. The heat, however, should be applied only for necessary time. A correct time estimation is vital for reaching good results. Exceeding the optimal time can result in a damage of thermally overstressed stones.



Recommendation:

Consider the best layout so that a maximal number of samples can be impressed.

Cleaning of the product

After soldering, let the product cool down and then remove it from the impression paste. Clean the product by immersing it into a mild alkali bath. Use ultrasound to remove solder remainders.

To remove a slight colouring caused by oxidization use a mild acid bath with ultrasound. Natural cleaning agents or identical cleaning substances (turpentine, limonene) can be used in a solution with alcohol and water. Let the product dry at an ambient temperature or dry it in warm air.

COMMON PROBLEMS BY SOLDERING

PROBLEM	RECOMMENDATION
1 Incorrect impression.	Compare the impression with the sample.
2 The solder does not flow properly – solder and material are heated insufficiently.	Clean mechanically and solder again. Check the solder and change it if necessary.
3 Too much solder – caused by a repeated soldering or an improper solder.	Clean the joint mechanically, e.g. by grinding.
4 Solder flows over the stones – the joint was heated too long.	Remove the solder, replace the damaged stones and set new ones.
5 Yellow or cracked stones – caused by overheating the stones.	Replace the damaged stones and set new ones.

Plating

Plating is a process using direct electrical current to produce thin metallic layers from solvents of metal salts; the metallic layers are deposited on electrically conductive articles but not on the stones. The stones remain untouched by this process.

Prior to plating, it is necessary to prepare the surface properly. It should be carefully cleaned (usually by degreasing), pickled and activated by dissolving a thin oxide layer on the article surface (usually using acid).



Rhinestone ball before plating



Rhinestone ball in contact silver treatment

GENERAL RULES AND RECOMMENDATIONS

Using Preciosa stones and components of the top quality together with optimal working conditions (semi-products of the best quality, proper tools, tested procedures) can considerably increase the labour efficiency.

Observing the following rules for surface treatment will avoid damaging Preciosa stones.



Note:

- Long exposition times in highly alkaline and cyanide baths together with high current densities can result in a chemical or mechanical destruction of the reflective layer on the bottom part of the stones and their complete damage.
- It is not recommended to use cyanide baths for brass or bronze platings.
- All procedures following the soldering should be carried out quickly one after another so that no excessive time delay occurs.

DEGREASING

Degreasing should be carried out immediately after soldering. If it is postponed (by a few hours or till the next day) the degreasing might not be as efficient as required.

Chemical degreasing

A warm, current-free alkali bath is used as the first degreasing step. Most of the dirt and solder remainders are removed. After degreasing, rinse the product in lukewarm water for 30 seconds.



Note: *If the ultrasound is too strong and the degreasing time too long the protective varnish of the reflective layer can be damaged.*

Electrolytic degreasing

Electrolytic degreasing is an appropriate second step for degreasing cup chain jewellery made of brass and non-ferrous metals in particular. Only cathodic degreasing is used.



Note: *The current density and time must not be exceeded. The reflective layer of the stones could be otherwise damaged (see table Basic characteristics of plating baths).*

PLATING

Pickling

Pickling is carried out in diluted acids (ca 5% HCl nebo H₂SO₄) to remove oxidization and any remainders from the soldering process.



Note: *Nitric acid (HNO₃) cannot be used for pickling. It etches and passivates the tin solder.*

Cyanide copper plating

Cyanide copper plating helps to improve the adhesion of the subsequent acid copper plating. Acid copper plating does not always adhere to the solder properly.



Note: *The current density and time must not be exceeded. The reflective layer of the stones could be otherwise damaged.*

Bright copper plating

A sulphuric bath for bright copper plating is recommended. The surface is perfectly evened up resulting in a bright lustre.



Note: *When using stones with AB coating, the AB coating can be plated if the recommended time for plating is exceeded.*

Nickel plating

Nickel plating is no more used as nickel is an allergen. Palladium or silver are used instead. If nickel plating is nevertheless necessary the usual chloride bath can be used. The conditions of the bath do not damage the stones.



Note: When using stones with AB coating the stone surface can be quickly plated as well. The recommended time for plating is max. 3 minutes in this case.

Palladium

Palladium is used as a white interlayer instead of nickel. Bronze cannot be used as the bronze bath is too aggressive and damages the stones.

Silver

Though a silver plating bath has a high content of cyanides and is strongly alkaline, it is used at the room temperature and is not dangerous for the stones.

Rhodium

A rhodium bath on sulphates or phosphates bases provides a high gloss plating. The bath conditions are not dangerous for the stones.

Gold

A gold plating bath can be alkaline (pH 9-10) or acid (pH 3-4). The bath conditions are not dangerous for the stones. An alkaline bath can provide plating of < 0,2 µm thickness. An acid gold plating bath should be used if a thicker gold layer is required (up to 1 µm).

Corrosion protection

To protect metal parts of cup chain jewellery against corrosion a protective organic varnish, usually on an acrylate base, is deposited by an electrophoresis. The varnish covers only conductive parts and the stones remain untouched. The varnish qualities are not dangerous for the stones.

Observing the above mentioned recommendations and rules together with using Preciosa stones and components ensure outstanding results.

BASIC CHARACTERISTICS OF PLATING BATHS

Operation/ Plating	Bath Description	Temperature		Acidity/ Alkalinity	Time		Current Density A/dm ²	Rinsing		Drying
		°C	°F	pH	Ultrasound Yes / No	1 st Stage T= 20° C 68° F		2 nd Stage T= 60° C 140° F	T= 90° C 194° F	
Hot Degreasing	Alkaline electroless bath	< 60°C	< 140°F	< 12,5	yes<2min	no<5min		30 sec.	no	no
Electrolytic Degreasing	Alkaline bath for cathodic degreasing	< 45°C	< 113°F	< 12,0	no < 20 sec.		< 3 A/dm ²	30 sec	no	no
Pickling	Dilute acids 5% HCl or 5-10% H ₂ SO ₄	< 30°C	< 85°F	< 1	no < 20 sec.			30 sec.	no	no
Cyanide Copper Plating	Warm cyanide copper bath	< 60°C	< 140°F	< 10,5	no < 30 sec.		< 2 A/dm ²	30 sec.	no	no
Bright Copper Plating	Glossy acid sulphurous copper bath	< 30°C	< 85°F	< 1	no < 10 min.		< 3 A/dm ²	30 sec.	no	no
Nickel Plating	Chloride or sulphurous nickel bath	< 60°C	< 140°F	4 - 5	no < 20 min.		< 9 A/dm ²	30 sec.	no	no
Palladium Plating	Cold weak alkaline bath	< 30°C	< 85°F	< 8 - 9	no < 2 min.		< 1 A/dm ²	30 sec.	no	no
Silver Plating	Cold cyanide bath	< 30°C	< 85°F	< 12,0	no < 1 min.		< 2 A/dm ²	30 sec.	no	no
Rhodium Plating	Sulphate- or phosphate-based baths	< 50°C	< 121°F	< 1	no < 1 min.		< 1 A/dm ²	30 sec.	30 sec.	yes
Gold Plating I	Acid gilding bath	< 60°C	< 140°F	2 - 5	no < 1 min.		< 1 A/dm ²	30 sec.	30 sec.	yes
Gold Plating II	Alkaline cyanide gilding bath	< 60°C	< 140°F	9 - 10	no < 1 min.		< 1 A/dm ²	30 sec.	30 sec.	yes

COMMON PROBLEMS BY PLATING

PROBLEM	RECOMMENDATION
1 Imperfect surface appearance before plating.	Before plating, clean the costume jewellery carrier properly: first mechanically, then chemically in a degreasing bath. Rinse thoroughly afterwards.
2 Uneven surface after plating, so called "orange peel".	Polish the surface better next time and check the technological conditions in the plating bath.
3 Corrosion.	Rinse the product in clean water. It is recommended to use de-mineralized water (conductivity <15µS/cm). Make the time gaps between individual procedures minimal.

Important advice and information

MAINTANANCE

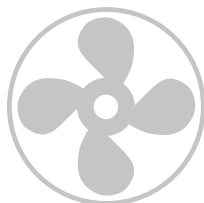
- Protect the costume jewellery from contact with hard objects.
- The costume jewellery lifetime can be prolonged if the costume jewellery is kept separately in a box or a bag.
- Do not wear the costume jewellery during activities where it can get into contact with water (bathing, showering, dish washing etc.) as it could suffer a damage.
- Do not wear the costume jewellery by sport or other physical activities, when going to bed etc. Mechanical or surface damage of the product can be thus avoided.
- Avoid a contact of the costume jewellery with chemical substances. Effects of some perfumes, creams, sea water, chlorine and other chemicals can damage surface treatments.
- Do not use the costume jewellery in surroundings where sulphur and jodine are present (e.g. spa).
- Clean the costume jewellery regularly. Use a soft cleaning cloth, aqueous solutions or cleaning creams (do not use lemon juice as it is aggressive).

CLEANNES AND WORK SAFETY

The material and all tools should be clean and without any grease in particular. When soldering and plating, an adequate ventilation is essential. Goggles and possibly protective gloves are also important. Follow the recommendations given in the safety information sheets of particular products. Protective gloves also prevent the tools from getting dirty.



*Tools and material
without grease*



*Ventilated
working place*



Goggles



Protective gloves

GENERAL RECOMMENDATIONS

FASHION JEWELLERY STONES

FLAT BACK STONES

Stones with coatings
— use only gentle
wash cycle (30 °C).



Turn inside out, choose a gentle wash cycle and use mild laundry detergent. To protect the crystals as much as possible, the use of a soft wash bag is recommended.



Turn inside out and use mild laundry detergent.



Do not wash!



Chlorine bleach may be used.



Do not use chlorine bleach!



Turn inside out and dry at reduced temperature.



Do not tumble dry!



Iron inside out using a silk/polyester viscose setting. Ironing the textile inside out and using a pressing cloth is recommended.



Iron inside out using a wool setting.



Do not iron! Do not iron directly over the crystals.



The textile can be gently dry-cleaned using perchlorethylene. Turn inside out.



The textile can be gently dry-cleaned using hydrocarbon.



The textile will withstand gentle professional wet cleaning. Turn inside out.



The textile may not be dry-cleaned.



To protect the crystals as much as possible, the use of a soft wash bag is recommended.

Preciosa Components

A Member of the Preciosa Group

Preciosa Group is a global leader in products *manufactured from crystal*. From the world famous Czech Beads and Crystal Components used in fashion industry, to tailor made Lighting projects for luxury hotels, royal palaces and yachts, the true craftsmanship of crystal production has been present in Bohemia since 16th century.

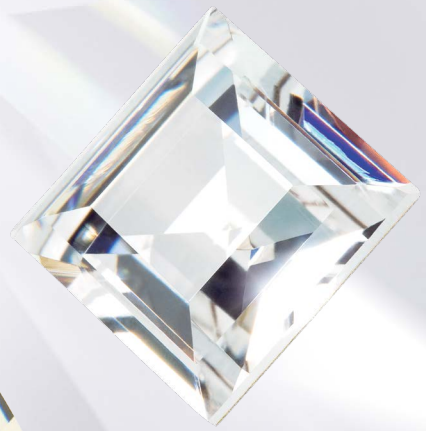
PreciosaComponents.com



APPLICATION MANUAL

Setting stones in epoxy clay

PRECIOSA

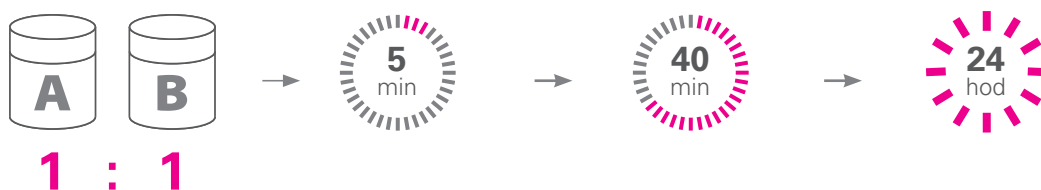


Working instructions for two-component glue for fixing glass stones in costume jewellery products

OVERVIEW OF PRECIOSA PRODUCTS SUITABLE FOR SETTING IN EPOXY CLAY

COMPONENTS		SETTING IN EPOXY CLAY
Fashion Jewellery Stones	Round Stones	✓
	Fancy Stones	✓

PROCEDURE



Preparation of the clay

Mix both clay components – A (resin) and B (hardener) – in the ratio recommended by the producer, typically 1:1.

Mixing the clay

Mix both clay components for at least 5 minutes till they are thoroughly mixed together.

Workability

The substance can be formed for 40 to 60 minutes, then it starts to harden.

Curing

The epoxy clay needs to cure 24 hours to reach its full strength and durability. Do not handle the material during this period.



The above given data are valid for the majority of the delivered substances. It is, however, recommended to follow the producer's instructions.

APPLICATION PROCEDURE



1 Take the required quantity of the clay components A (resin) and B (hardener) from the cartridges in a ratio recommended by the producer, typically 1:1 by weight.



2 Mix both clay components A and B thoroughly. A properly mixed substance is significant for a firm bond between the clay and the underlying material as well as for a proper fixing of the stone in the clay.



3 Mix the clay for at least 5 minutes till you get a homogenous substance.



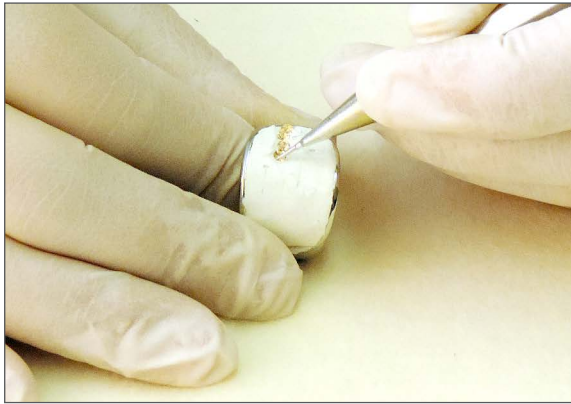
4 Form the required shape from the substance.



5 Fix the pre-formed substance on the base material (e.g. a costume jewellery part) and mould it into the final shape.



6 Place the stones in the prepared substance and press them properly up to their girdle into it. Only then are the stones perfectly fixed in the costume jewellery part.



7 The clay should not extend beyond the stone edges as it would negatively influence the brilliance of the stones (optical qualities).



8 Produced substances are typically workable for ca. 40 to 60 minutes. Setting the stones and correcting their position should be carried out during this interval.



9 The epoxy clay cures at ambient temperature. After curing, clean the product with a soft cloth or a stick with cotton wool. A small amount of alcohol can be used in case of need.

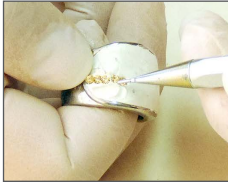


10 The maximal strength of a finished product (stones fixed firmly) is reached after ca. 24 hours or when the clay is no more elastic.

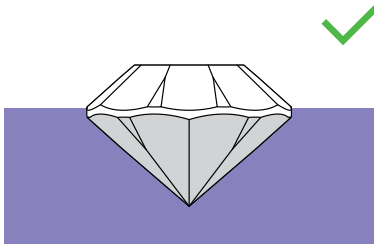


Use protective gloves when working with the clay. Make sure that the working surface is always clean, i.e. without dust, grease and other impurities.

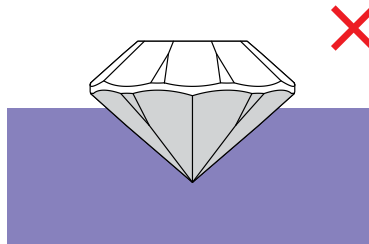




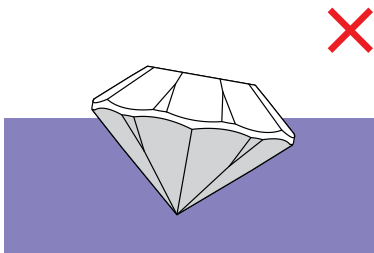
A correct position of the stone in the clay
Note to the step No. 6



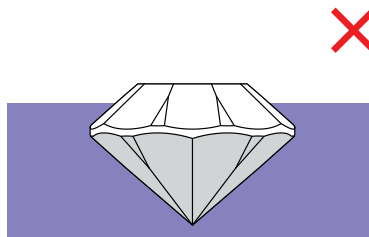
A correct position of the stone in the clay



The stone is pressed too little



The stone is set askew



The stone is pressed too deep

Recommended epoxy clays

PRODUCT	PRODUCER	WWW
Ferido X2-SP Glue	Cyberbond Apollo 2999 (Cyberbond)	www.ferido.com
epoGEM	International Adhesive Manufacturer	www.inter-adhesive.com
wGlue	Trinity Industry	www.wglue.en.ec21.com

Important advice and information

POSSIBLE PROBLEMS, THEIR CAUSES AND RECOMMENDATIONS

PROBLEM	CAUSE
Some stones fall out even after clay hardening.	1, 2, 3, 5, 6, 8
The substance is not fixed to the base material.	1, 2, 3, 5
Some stones lose their brilliance.	4, 7

CAUSE	RECOMMENDATION
1 The correct ratio of A and B was not observed.	Pay attention to the proper ratio recommended by the clay producer.
2 A and B components were not properly mixed.	Mix the substance longer till it is perfectly homogenous.
3 The workable time of the substance was exceeded.	Mix a new substance.
4 The stone surface was stained by clay.	Clean the product with a soft cloth or a stick with cotton wool after the clay was cured at the room temperature. Use a small amount of alcohol in case of need. Make sure that the working surface is always clean, i.e. without dust, grease or other impurities.
5 The surface of the jewellery piece was not properly cleaned.	Make sure that the working surface is always clean, i.e. without dust, grease or other impurities.
6 The stone is not set deep enough.	Set the stone up to its girdle.
7 The stone is set too deep.	Set the stone only to its girdle.
8 The substance has not cured for 24 hours.	Observe the recommendations of the clay producer regarding the curing conditions and glue lifetime.

GENERAL RECOMMENDATIONS

FASHION JEWELLERY STONES

FLAT BACK STONES

Stones with coatings
— use only gentle
wash cycle (30 °C).



Turn inside out, choose a gentle wash cycle and use mild laundry detergent. To protect the crystals as much as possible, the use of a soft wash bag is recommended.



Turn inside out and use mild laundry detergent.



Do not wash!



Chlorine bleach may be used.



Do not use chlorine bleach!



Turn inside out and dry at reduced temperature.



Do not tumble dry!



Iron inside out using a silk/polyester viscose setting. Ironing the textile inside out and using a pressing cloth is recommended.



Iron inside out using a wool setting.



Do not iron! Do not iron directly over the crystals.



To protect the crystals as much as possible, the use of a soft wash bag is recommended.



The textile can be gently dry-cleaned using perchlorethylene. Turn inside out.



The textile can be gently dry-cleaned using hydrocarbon.



The textile will withstand gentle professional wet cleaning. Turn inside out.



The textile may not be dry-cleaned.



**BEADS AND
PENDANTS**

**NACRE
PEARLS**

**FASHION AND FASHION
JEWELLERY COMPONENTS**

Beads

Pendants

Cup Chains

Plastic
Bandings

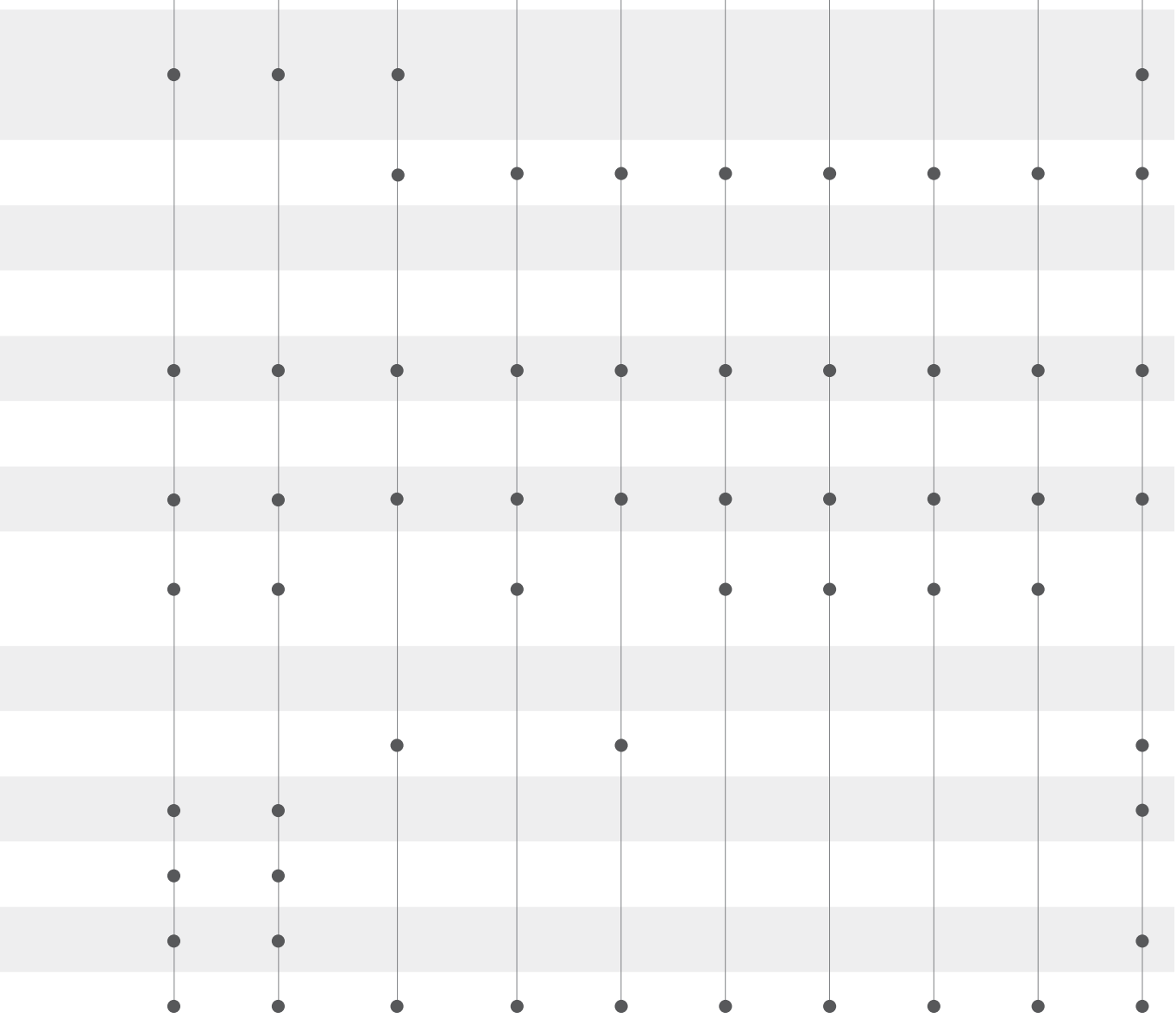
Metal
Bandings

Rondelles
and Balls

Fancy
Rondelles

Stones in
Settings

Crystal
Threads



Notes

Preciosa Components

A Member of the Preciosa Group

Preciosa Group is a global leader in products *manufactured from crystal*. From the world famous Czech Beads and Crystal Components used in fashion industry, to tailor made Lighting projects for luxury hotels, royal palaces and yachts, the true craftsmanship of crystal production has been present in Bohemia since 16th century.

PreciosaComponents.com